



2017 Annual Summary Report
Windsor Utilities Commission



New piping is shown during early construction of the George Avenue Reservoir project.

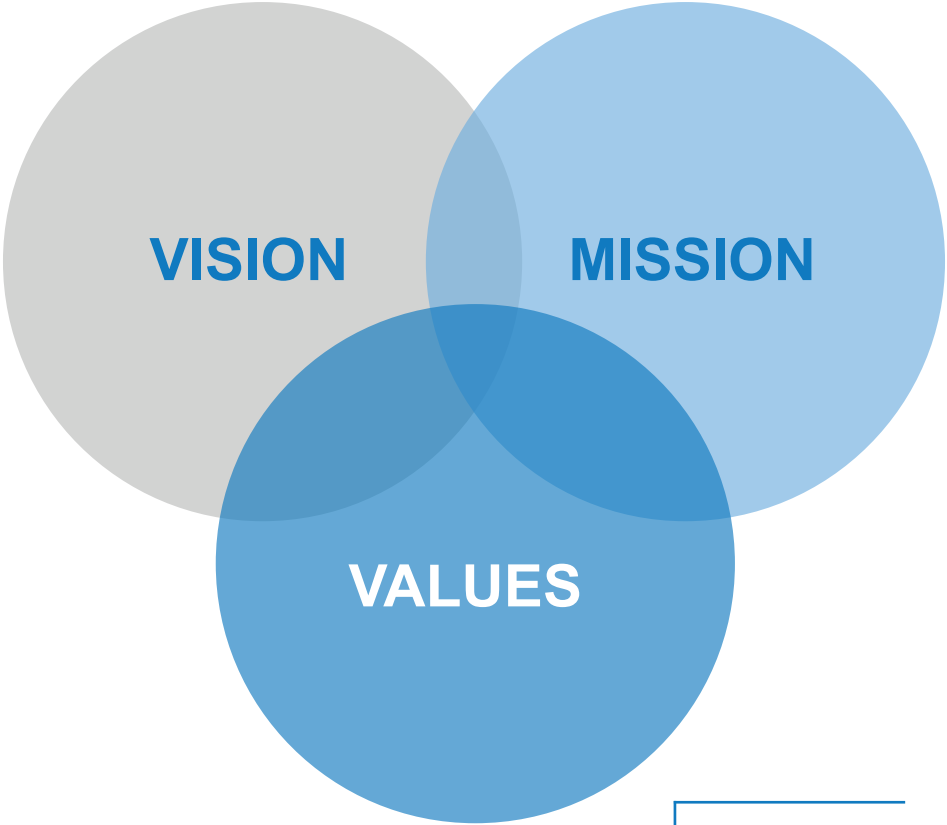
OUR VISION, MISSION AND VALUES

Our Vision

To be a trusted leader in providing exceptional value and services to our customers and stakeholders.

Our Mission

To provide safe and reliable water services in a cost effective manner.



Our Values

- Leadership
- Accountability
- Integrity

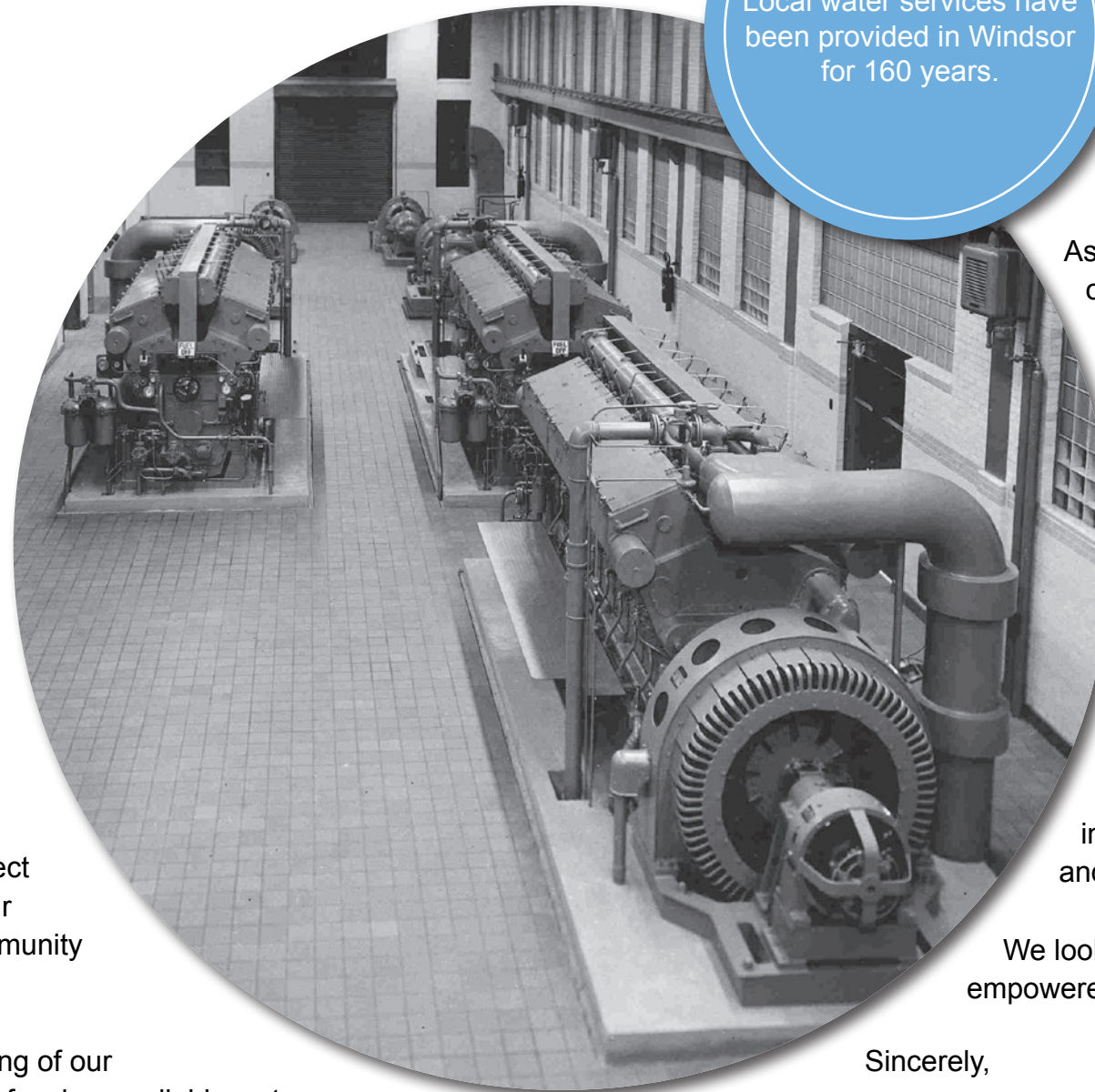


Workers install a watermain as part of the George Avenue Reservoir project.

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Message from Windsor Utilities Commission



Local water services have been provided in Windsor for 160 years.

Windsor Utilities Commission is a Proud Partner in Our Community

A Proud Partner in Our Community

2017 has been a year of milestone anniversaries. As Canada celebrated its 150th anniversary, Windsor celebrated 125 years. At Windsor Utilities Commission, we celebrated a different kind of milestone - 160 years since the beginning of local water services in Windsor.

In 1857, the town of Windsor installed a wooden hand pump, at the foot of Brock Street, to serve the needs of the local community. At that time, the pump was the sole common source of water for the residents and businesses of the town.

We have come a long way since then.

In 2017, we take a moment to remember our roots and to reflect on the journey that has allowed us to continuously improve our facilities, our services and the safety and reliability of our community water supply.

As it was for the town, in 1857, our focus remains the well-being of our community — the quality of life we provide when we deliver safe, clean, reliable water. At Windsor Utilities Commission, it is still our goal to be a trusted leader in supplying this precious, essential commodity to our families and businesses.

Water enables life. Our water supply in Windsor, continues to meet Ontario quality standards, in a heavily regulated environment. Our employees' dedication to excellence allows our residents and businesses to thrive. We are proud of that commitment.

As we reflect on the past, we envision the future - and we design our capacity to deliver what our customers will need. Innovation, technology and collaboration are not just words - they are the keys to our future. As our community grows and changes, so will we.

Throughout 2017, we continued to build the partnerships we need to deliver that future - partnerships with businesses, water sector organizations, educators and regulatory bodies. In doing so, we continued to uncover solutions for sustainable water - not only locally, but on a global scale.

The foundation for our future begins with our new water reservoir, which will ensure the reliability of our supply for many decades to come. We are proud of the talented, innovative, hardworking employees, who envisioned this need and enlisted the support they required to make it happen.

We look forward to continuing to build on the work we have begun, empowered by dedicated employees and powerful partnerships.

Sincerely,

Jim Drummond, Board Chair
Windsor Utilities Commission

Garry Rossi, Vice President Water Operations
ENWIN Utilities Ltd.

Introduction

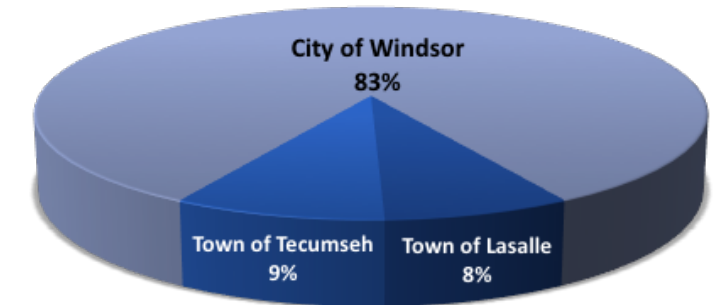
In 2017 Windsor Utilities Commission produced 41,015 megalitres of potable water for use by the citizens of the City of Windsor, the Town of LaSalle and the Town of Tecumseh.

2017 Total Treated Water by Municipality Volume in megalitres (ML)

Town of Lasalle	Town of Tecumseh	City of Windsor
3,175.1	3,585.2	34,255.2

In 2017, Windsor Utilities Commission produced 41,015 megalitres of potable water for use by the citizens of the City of Windsor, the Town of LaSalle and the Town of Tecumseh.

The attached summary (see Appendix A, Table 1) provides a detailed breakdown of the monthly production rates, including the average day, peak day and peak hour for each of the months. The volume of water transferred to the Town of LaSalle and the Town of Tecumseh is also provided.

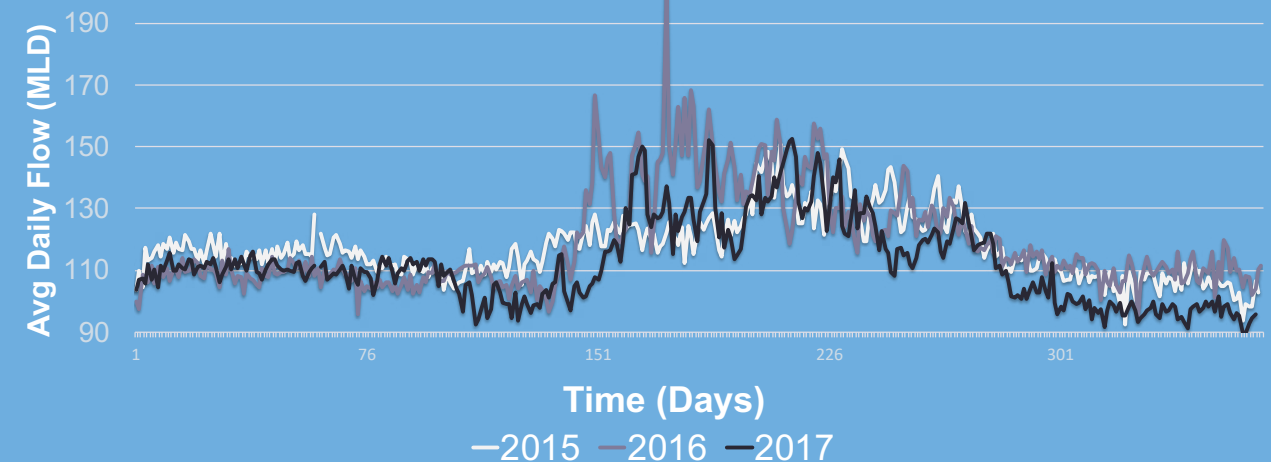


Percentage of water delivered to each served Municipality.

Under Ontario Reg. 170/03 there are a number of Schedules that outline the requirements for compliance with the Safe Drinking Water Act (SDWA). This report highlights the requirements of the applicable section of the regulation along with a statement of compliance or, if applicable, specific areas of non-compliance with the schedule requirements.

2015 - 2017 Volume of Approved Capacity

349 ML Maximum Approved Capacity



Workers head down to examine progress on the George Avenue Reservoir Project.

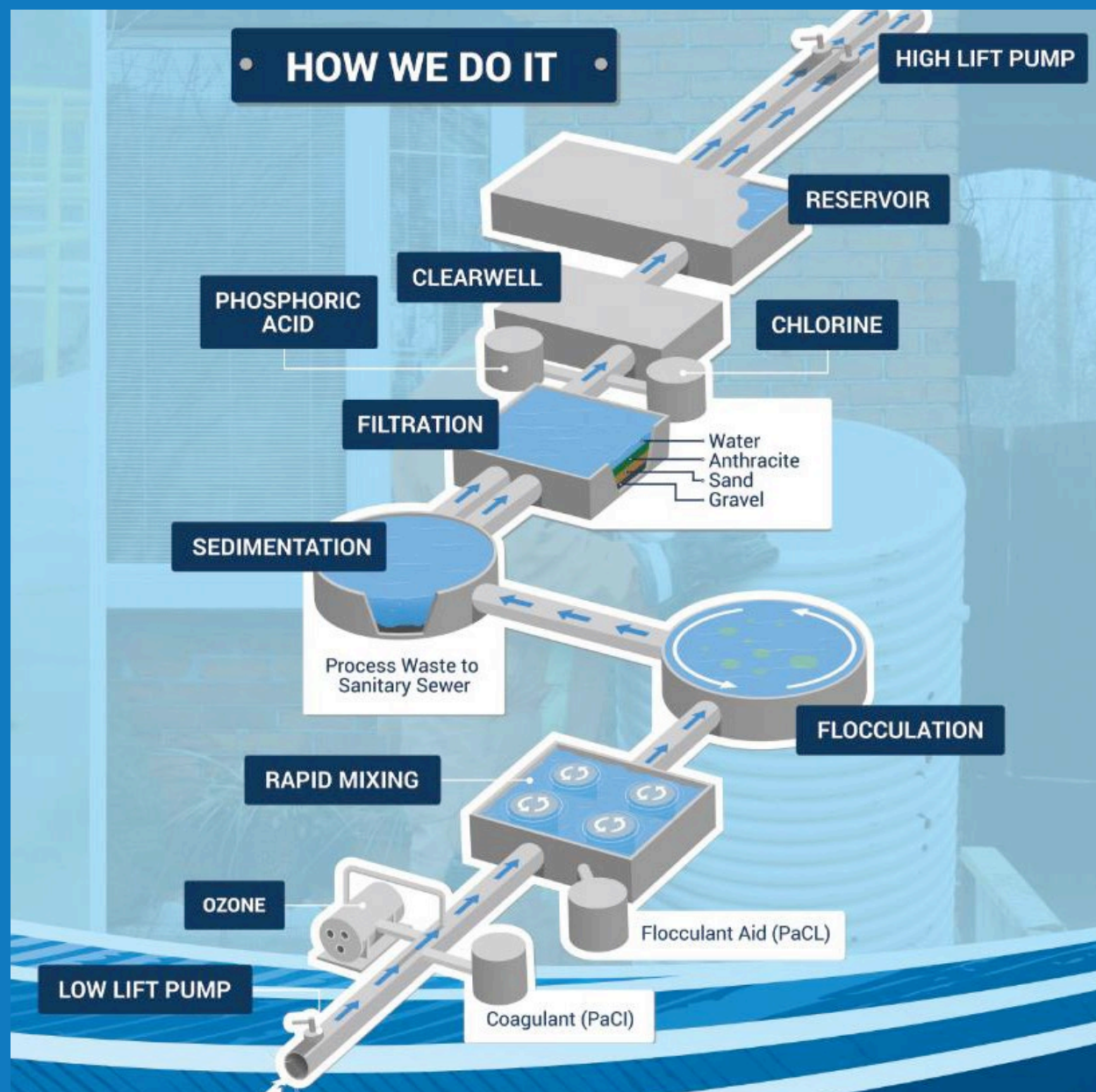
Schedule 1

Treatment Equipment

Schedule 1 dictates that the owner of a drinking water system shall ensure that approved water treatment equipment, as specified in the facility Licence or Certificate of Approval, is provided and is in operation whenever water is being supplied for potable use. Further, the regulation requires that the equipment is being operated in a manner

that achieves its design capabilities and that only certified operators are carrying out operation of the system. Below is a schematic of the overall treatment train for the A.H. Weeks Treatment Plant.

In the calendar year 2017, WUC complied fully with this section of the regulations.



Treatment equipment is shown at the A.H. Weeks Water Treatment Plant.

Schedule 6

Operational Checks, Sampling and Testing - General

This schedule outlines:

- the frequency of sampling and equipment checks
- the requirement for chlorine residual testing to be carried out at the time microbiological samples are collected
- the location at which samples are to be collected
- the form of sampling to be undertaken and the requirements for continuous monitoring equipment
- clarification on how samples are to be handled and recorded, and dictates the need for an appropriately accredited laboratory to carry out the sample analysis.

In the calendar year 2017, WUC complied fully with this section of the regulations.

Schedule 7

Operational Checks

This schedule specifies the requirements for continuous monitoring equipment for free chlorine residual, turbidity and fluoride and the required location for this equipment. The regulation dictates the requirement for regular collection and analysis of samples by an appropriately certified individual. The chart below summarizes the results for the above mentioned parameters. In the calendar year 2017, WUC complied fully with this section of the regulations.



Schedule 10

Microbiological Sampling and Testing

This schedule provides the requirements for sampling and testing of microbiological parameters.

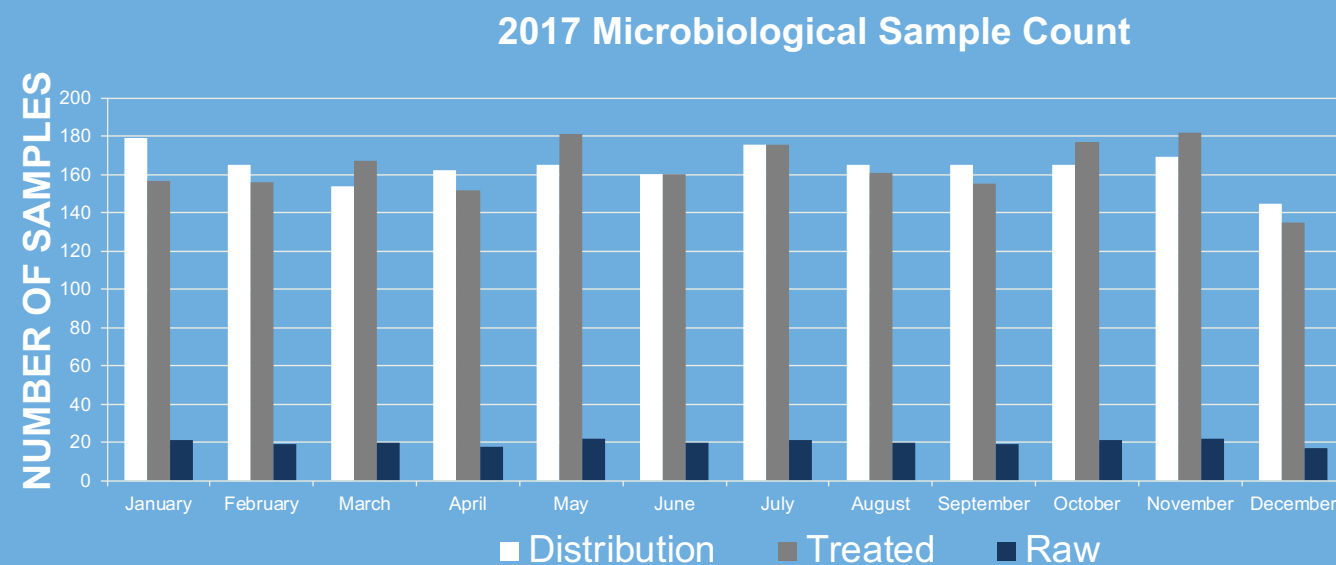
The schedule states that for Large Municipal Systems serving a population of more than 100,000 people, the required monthly frequency of sampling is 100 distribution samples, plus one additional sample for every 10,000 people served, with at least three samples being taken in each week. Each of these samples are to be tested for *Escherichia coli* and total coliform, with a requirement that at least 25% of the samples required to be tested for general bacteria population expressed as colony counts on a heterotrophic plate count. Windsor's required sampling frequency is 130 samples monthly.

In 2017, 1970 samples were collected and analysed, an average of 164 samples per month. Approximately 59% of the distribution samples were also analysed for

heterotrophic plate count. In addition, each sample was tested for free chlorine residual at the time the sample was taken.

Schedule 10 states that a treated water sample must be taken at least once per week and tested for *Escherichia coli*, total coliform and general bacteria population expressed as colony counts on a heterotrophic plate count. Windsor's treated water samples were generally collected on a daily basis and were tested by an accredited third-party laboratory.

The schedule further states that a raw water sample must be taken at least once per week, before any treatment is applied to the water, and that the sample be tested for *Escherichia Coli* and total coliform. Samples were collected and tested on average five days per week. The following chart indicates the number of samples taken on a monthly basis.



Schedule 13

Chemical Sampling and Testing

This schedule provides the requirements for sample collection and testing for a variety of chemical components in drinking water. Additionally, it lists the Maximum Acceptable Concentration (MAC) for each component. The requirements are outlined below along with the status of Windsor's sampling program.

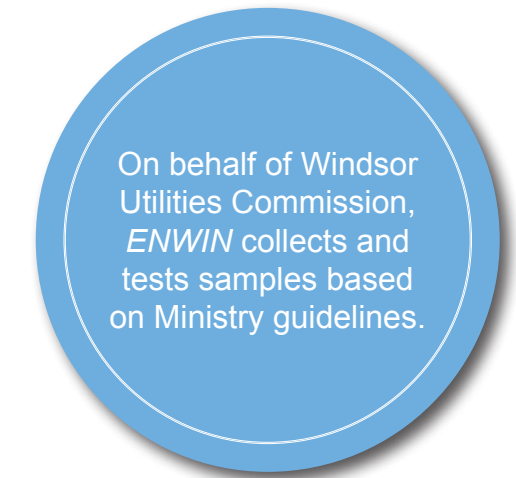
Inorganics

One sample must be collected and tested every 12 months if the source is surface water and tested for every parameter set out in Schedule 23. (see pg. 14, Table 13.1)

In 2017, samples were collected and tested for every parameter set out in Schedule 23 on a quarterly basis.

Lead

One sample must be collected and tested every 12 months for Lead. (see pg. 14, Table 13.1)



Windsor collected samples and tested for lead in a treated water sample and a distribution sample on a quarterly basis.

Nitrates and Nitrites

The owner of a drinking-water system and the operating authority for the system shall ensure that at least one water sample is taken every three months and tested for nitrate and nitrite. (see Table 13.1)

In 2017, on behalf of Windsor Utilities Commission, ENWIN collected samples and tested for nitrates and nitrites on a quarterly basis.



Schedule 13 (con't)

Sodium

The schedule stipulates that at least one water sample is taken every 60 months and tested for sodium. (see Table 13.1)

On behalf of Windsor Utilities Commission, ENWIN last collected and sampled for sodium on January 4, 2017.

Organics

One sample must be collected and tested every 12 months, if the source is surface water, and tested for every parameter set out in Schedule 24. (see pg. 15-16 Table 13.2)

During 2017, on behalf of Windsor Utilities Commission, ENWIN collected samples and tested for every parameter set out in Schedule 24 on a quarterly basis.

Trihalomethane (THM's)

For any system that provides chlorination, one distribution sample will be collected and tested for trihalomethanes every 3 months. (see pg. 15-16 Table 13.2)

ENWIN, on behalf of Windsor Utilities Commission collected samples and tested for trihalomethanes on a quarterly basis.

Table 13.1 – Inorganics, Lead, Nitrates, Nitrites and Sodium Sample Results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	October 4, 2017	0.00008	mg/L	No
Arsenic	October 4, 2017	0.0004	mg/L	No
Barium	October 4, 2017	0.0153	mg/L	No
Boron	October 4, 2017	0.027	mg/L	No
Cadmium	October 4, 2017	0.00001	mg/L	No
Chromium	October 4, 2017	0.00072	mg/L	No
Lead	October 4, 2017	0.00001 <MDL	mg/L	No
Mercury	October 4, 2017	0.00001 <MDL	mg/L	No
Selenium	October 4, 2017	0.00015	mg/L	No
Sodium	January 4, 2017	5.66	mg/L	No
Uranium	October 4, 2017	0.000085	mg/L	No
Fluoride	January 4, 2017	0.09	mg/L	No
Nitrite	October 4, 2017	0.003 <MDL	mg/L	No
Nitrate	October 4, 2017	0.204	mg/L	No

Table 13.2 – Organics and THM Sample Results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Oct 4, 2017	0.00002 <MDL	mg/L	No
Atrazine + N-dealkylated metabolites	Oct 4, 2017	0.00001 <MDL	mg/L	No
Azinphos-methyl	Oct 4, 2017	0.00005 <MDL	mg/L	No
Benzene	Oct 4, 2017	0.00032 <MDL	mg/L	No
Benzo(a)pyrene	Oct 4, 2017	0.000004 <MDL	mg/L	No
Bromoxynil	Oct 4, 2017	0.00033 <MDL	mg/L	No
Carbaryl	Oct 4, 2017	0.00005 <MDL	mg/L	No
Carbofuran	Oct 4, 2017	0.00001 <MDL	mg/L	No
Carbon Tetrachloride	Oct 4, 2017	0.00016 <MDL	mg/L	No
Chlorpyrifos	Oct 4, 2017	0.00002 <MDL	mg/L	No
Diazinon	Oct 4, 2017	0.00002 <MDL	mg/L	No
Dicamba	Oct 4, 2017	0.00020 <MDL	mg/L	No
1,2-Dichlorobenzene	Oct 4, 2017	0.00041 <MDL	mg/L	No
1,4-Dichlorobenzene	Oct 4, 2017	0.00036 <MDL	mg/L	No
1,2-Dichloroethane	Oct 4, 2017	0.00035 <MDL	mg/L	No
1,1-Dichloroethylene (vinylidene chloride)	Oct 4, 2017	0.00033 <MDL	mg/L	No
Dichloromethane	Oct 4, 2017	0.00035 <MDL	mg/L	No
2,4-Dichlorophenol	Oct 4, 2017	0.00015 <MDL	mg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Oct 4, 2017	0.00019 <MDL	mg/L	No
Diclofop-methyl	Oct 4, 2017	0.0004 <MDL	mg/L	No
Dimethoate	Oct 4, 2017	0.00003 <MDL	mg/L	No
Diquat	Oct 4, 2017	0.001 <MDL	mg/L	No
Diuron	Oct 4, 2017	0.00003 <MDL	mg/L	No
Glyphosate	Oct 4, 2017	0.001 <MDL	mg/L	No
Haloacetic Acids (HAA5) - Running Annual Average	Oct 4, 2017	0.0053 <MDL	mg/L	No
Malathion	Oct 4, 2017	0.00002 <MDL	mg/L	No
MCPA	Oct 4, 2017	0.00012 <MDL	mg/L	No
Metolachlor	Oct 4, 2017	0.00001 <MDL	mg/L	No
Metribuzin	Oct 4, 2017	0.00002 <MDL	mg/L	No
Monochlorobenzene	Oct 4, 2017	0.0003 <MDL	mg/L	No
Paraquat	Oct 4, 2017	0.001 <MDL	mg/L	No
Pentachlorophenol	Oct 4, 2017	0.00015 <MDL	mg/L	No
Phorate	Oct 4, 2017	0.00001 <MDL	mg/L	No
Picloram	Oct 4, 2017	0.001 <MDL	mg/L	No

Polychlorinated Biphenyls (PCB)	Oct 4, 2017	0.00004 <MDL	mg/L	No
Prometryne	Oct 4, 2017	0.00003 <MDL	mg/L	No
Simazine	Oct 4, 2017	0.00001 <MDL	mg/L	No
THM – Running Annual Average	Oct 4, 2017	0.0090	mg/L	No
Q1 2017 = 0.006 mg/L	Jan 4, 2017			No
Q2 2017 = 0.007 mg/L	April 3, 2017			No
Q3 2017 = 0.012 mg/L	July 3, 2017			No
Q4 2017 = 0.011 mg/L	Oct 4, 2017			No
Terbofos	Oct 4, 2017	0.00001 <MDL	mg/L	No
Tetrachlorethylene	Oct 4, 2017	0.00035 <MDL	mg/L	No
2,3,4,6-Tetrachlorophenol	Oct 4, 2017	0.00020 <MDL	mg/L	No
Triallate	Oct 4, 2017	0.00001 <MDL	mg/L	No
Trichloroethylene	Oct 4, 2017	0.00044 <MDL	mg/L	No
2,4,6-Trichlorophenol	Oct 4, 2017	0.00025 <MDL	mg/L	No
Trifluralin	Oct 4, 2017	0.00002 <MDL	mg/L	No
Vinyl Chloride	Oct 4, 2017	0.00017 <MDL	mg/L	No

Table 13.3 Bromate Sample Results

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
MDWL 025-101	*Bromate - Treated	1-Jan-17 to 31-Dec-17	0.004	mg/L
MDWL 025-101	*Bromate - Distribution	1-Jan-17 to 31-Dec-17	0.004	mg/L

* Reported as running Annual Average



Sampling and Testing Lead

Schedule 15.1

Lead

This schedule provides the requirements for sampling and testing of Lead.

The schedule states that for Large Municipal Systems serving a population of more than 100,000 people, two sets of samples must be taken. One set of samples shall be taken from December 15, 2016 to April 15, 2017 and the second set from June 15, 2017 to October 15, 2017. The minimum number of samples to be collected for a population of 100,000 or more is 130 sample locations per round. *These samples include private, non-private and distribution.* Each of these samples are to be tested for Lead.

A total of 496 Lead sample locations have been collected and tested in 2017. 295 sample private and non-private and 201 samples in distribution.

Of the sample locations tested, 30 sample locations exceeded the 10 ug/L reporting requirement.

In the calendar year 2017, In the calendar year 2017, WUC complied fully with the requirements of Schedule 15.1.

The minimum number of samples to be collected for a population of 100,000 or more is 130 sample locations per round.



New infrastructure is installed at the site of the new George Avenue Reservoir.

Schedule 16

Reporting Adverse Test Results and Other Problems

If a sample collected and tested indicates an adverse result as outlined in the regulations, the owner of a drinking water system must report the result to the Medical Officer of Health (MOH) and the Spills Action Centre (SAC) of the Ministry of Environment and Climate Change (Ministry). If an observation, other than an adverse test, results indicates that a drinking water system is directing water that may not be adequately disinfected to users of the water system, the observation must be reported to the MOH and the SAC.

If a report is required under this section, a verbal report must be provided to the

MOH by speaking directly to a person at the Windsor Essex County Health Unit (WECHU) or the designated on call representative. In addition, a verbal report must be provided to the Ministry by contacting the SAC.

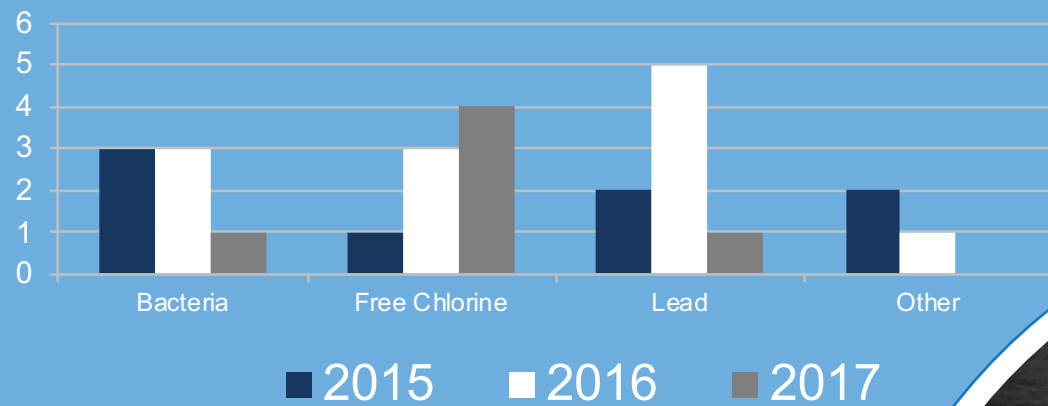
These verbal reports of adverse water conditions must be verified by written notice within 24 hours to the MOH and the SAC, specifying the nature of the adverse result, actions being taken or observation and what corrective action is being taken.

Within seven days of resolution of a problem, a follow up written notice is to be provided outlining the resolution that gave rise to the adverse result report.

In 2017, there were six adverse incidents requiring notification of the MOH and the SAC. Of these, four resulted from low chlorine being less than 0.05 mg/L within the distribution system, one resulted from a lead exceedance, one resulted from Coliform at the a Sample stations in the distribution.

In all situations where it was determined that there was an adverse result, notification was made to the MOH and the SAC.

Adverse Water Quality Incidents



Schedule 17

Corrective Action

This schedule outlines required corrective action to be followed with the determination of an adverse result requiring notification.

In all cases, the required corrective action was followed as directed by the Medical Officer of Health.

The current reservoir at the completion of construction in 1949.

The new George Avenue Reservoir has capacity for 5 million litres of treated water.

Schedule 22

Summary Reports for Municipalities

Not later than March 31 of each year, a summary report must be prepared for the preceding calendar year and submitted to members of municipal council and members of a municipal services board, if one exists.

The submission of this report fulfils the requirement for this section of the regulations.

Summarizing tables are attached for review (see pg. 28-35)

- 2017 treated water volume (Table 1)
- 2017 volume as a percentage of approved plant capacity (Table 2)
- 2017 microbiological sample counts (Table 3)
- 2017 distribution chlorine residuals (Table 4)
- 2017 operational parameters (Table 5)

A copy of Schedule 23 (inorganic test parameters) and Schedule 24 (organic test parameters) are attached for information, along with the 2017 Annual Report as previously submitted and as required by the regulation. (See pg. 36-37)

Capital Renewal Program



WUC undertook several capital projects in 2017 including:

- Water meter replacements
- Watermain replacement program
- Phase I - Filter bed rehabilitation at A.H. Weeks Plant
- Mirlee decommissioning and installation of new CAT at A.J. Brian Pumping Station
- City Hall De-piping
- Reservoir.

Brief descriptions of each project are noted below.

Water Meter Replacement Program

The goal of WUC's ongoing water meter replacement program is to replace all damaged, frozen, defective, aging and obsolete water meters, both in residential

and industrial, commercial and institutional (ICI) settings. The program also incorporates the installation of new meters on both residential and newly constructed services in the City of Windsor, and ICI (Industrial / Commercial / Institutional.)

Through this program, WUC installed 8,002 new meters in 2017 (approximately 11% of our total meter population.) The average age of our total meter population is 9.4 years. For ICIs only, the average age is 6.9 years.

New meters provide benefits including:

- increased accuracy in billing for our customers
- improved efficiency in meter reading as reads can be obtained via radio frequency (RF)
- enhanced ability to identify the sources and manage the causes of non-revenue water, thereby limiting revenue loss for both WUC and the City of Windsor.

The program will continue in 2018, and over the next five years *ENWIN*, on behalf of WUC, will replace approximately 8,000 meters per year. Efforts will be focused on the completion of certain segments of the city, enabling entire meter routes to be read with a "drive-by" (RF) method. Approximately 68% of the meters are now RF-enabled.

Watermain Replacement Program

The WUC capital renewal program involved the replacement of approximately 11.0 km of existing cast and ductile iron watermains, as well as water services with new PVC pipelines and polyethylene/copper tubing, respectively. Water services are typically replaced from the new main to the property line. This project included watermains, which no longer provided adequate service and were deemed to have the highest risk to public health.

- Installed 86 hydrants
- Removed 85 Old Public use Hydrants

The Ministry and Ontario Fire Codes (OFC) mandate minimum levels of performance required throughout the water distribution system.

Capital Renewal Program



Reservoir

Phase 1, "The Pipeline" project was completed by D'Amore Construction in Q3 of 2017.

Phase 2, "The Box" has been awarded to Kenaidan/WSP consortium. AECOM Consulting is ENWIN's representative on this project. The project is currently under construction and is anticipated to be completed in Q2 of 2018.

Mirlee Decommissioning and Installation of new CAT at A.J. Brian Pumping Station

At the A.J. Brian Pumping Station, two Mirlee diesel motors were coupled to two high lift

pumps. The motors were 1920's vintage, and showing their age. Repair parts were not available. A new Caterpillar diesel motor was purchased, and both of the Mirlees motors were decommissioned. This new diesel motor is much easier to start and run than the old diesel motors. It is far more efficient and emits far fewer emissions.

Phase I - Filter Bed Rehabilitation at A.H. Weeks Plant

There was a failure in the under drain system of filter #1. After some investigation,

it was determined that the under drain system was obsolete and could not be repaired. After some research, WUC decided to replace the current plastic under drain system with a new stainless steel system. In preparation for this work, the filter media and the old under drain system were removed. It was then discovered that there was some spalling of the concrete walls of the filter. It is recommended that the concrete surface should be coated to prevent further degradation.

The new underdrains have been ordered, the coating of the filter walls has been tendered and new filter media has been purchased.

City Hall DEW Piping

WUC and District Energy Windsor are supplying heating and cooling energy to the new City Hall building. Hot and cold water is delivered to the building through a piping network in Windsor's downtown core. The service will save the City of Windsor money, reduce its carbon footprint and add a source of revenue for WUC.



**BUILDING
THE FUTURE**

Appendix A - Operational Charts

Windsor Utilities Commission

Table 1 - 2017 Treated Water Volume

MONTH	Total Pumped Volume		Daily Average Volume		Maximum Daily Volume		Minimum Daily Volume		Instantaneous Peak Volume		Town of Lasalle Volume		Town of Tecumseh Volume		City of Windsor Volume	
	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML	ML
JANUARY	3,417.16	3,417.16	110.231	115.660	12	103.640	4	211.269	249.722	245.238	2,922.200					
FEBRUARY	3,108.30	3,108.30	111.011	116.230	8	106.700	18	252.787	217.835	220.945	2,669.520					
MARCH	3,395.90	3,395.90	109.545	114.440	21	102.100	25	162.283	244.613	225.374	2,925.913					
APRIL	3,144.46	3,144.46	104.815	113.640	3	92.410	14	159.837	227.988	246.115	2,670.357					
MAY	3,181.44	3,181.44	102.627	115.060	18	93.870	5	169.756	264.147	280.300	2,636.993					
JUNE	3,849.39	3,849.39	128.313	150.250	13	112.750	11	238.205	338.776	362.498	3,148.116					
JULY	4,089.78	4,089.78	131.928	152.000	5	113.620	31	223.360	395.005	392.212	3,302.563					
AUGUST	4,075.86	4,075.86	131.479	152.340	1	116.650	1	220.723	395.340	398.529	3,281.991					
SEPTEMBER	3,562.07	3,562.07	118.736	131.840	26	108.250	22	202.700	191.937	377.284	2,992.849					
OCTOBER	3,292.03	3,292.03	106.411	121.840	4	95.850	15	190.219	275.437	320.791	2,695.802					
NOVEMBER	2,916.75	2,916.75	97.225	101.530	3	91.630	29	219.200	225.941	261.426	2,429.383					
DECEMBER	2,982.37	2,982.37	96.172	101.430	17	89.430	16	216.800	148.357	254.513	2,579.500					
TOTAL	41,015.510	41,015.510							3,175.1	3,585.2	34,255.187					
AVERAGE	3,417.959	3,417.959							264.6	298.8	2,854.599					

Note: Volumes reported in megalitres (ML)

Table 2 - 2017 Volume as a Percentage of Approved Plant Capacity (Part 1 - January to June)

Date	January		February		March		April		May		June	
	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %
1	103.6	30%	110.4	32%	111.2	32%	112.8	32%	99.0	28%	116.2	33%
2	106.9	31%	113.5	33%	112.5	32%	109.7	31%	94.5	27%	115.9	33%
3	107.5	31%	110.5	32%	106.8	31%	113.6	33%	102.7	29%	116.4	33%
4	105.9	30%	114.3	33%	107.7	31%	111.5	32%	93.9	27%	119.9	34%
5	112.0	32%	112.0	32%	109.1	31%	113.5	33%	99.0	28%	118.7	34%
6	106.7	31%	109.8	31%	108.6	31%	113.6	33%	101.4	29%	112.8	32%
7	110.2	32%	114.6	33%	110.1	32%	112.8	32%	99.2	28%	119.6	34%
8	104.4	30%	116.2	33%	111.6	32%	105.0	30%	96.3	28%	130.1	37%
9	111.4	32%	109.2	31%	109.3	31%	112.1	32%	98.8	28%	124.9	36%
10	109.8	31%	108.8	31%	104.1	30%	108.3	31%	99.2	28%	140.8	40%
11	113.3	32%	106.9	31%	111.5	32%	109.5	31%	97.8	28%	141.3	40%
12	115.7	33%	110.2	32%	107.1	31%	110.3	32%	102.3	29%	146.6	42%
13	109.7	31%	112.1	32%	105.3	30%	106.4	30%	103.6	30%	150.3	43%
14	109.6	31%	113.6	33%	110.7	32%	104.0	30%	101.2	29%	148.9	43%
15	112.1	32%	113.5	33%	109.4	31%	102.5	29%	105.8	30%	128.0	37%
16	110.8	32%	111.6	32%	109.4	31%	96.8	28%	105.9	30%	124.1	36%
17	110.2	32%	110.1	32%	107.3	31%	105.1	30%	115.0	33%	128.0	37%
18	113.5	33%	109.8	31%	102.1	29%	106.1	30%	115.1	33%	126.6	36%
19	113.2	32%	110.3	32%	106.4	30%	101.8	29%	103.4	30%	127.2	36%
20	108.8	31%	109.8	31%	111.7	32%	92.4	26%	99.5	29%	128.9	37%
21	110.9	32%	109.5	31%	114.4	33%	94.0	27%	96.8	28%	137.4	39%
22	111.4	32%	112.4	32%	111.5	32%	97.1	28%	104.8	30%	131.7	38%
23	110.8	32%	112.6	32%	114.2	33%	101.0	29%	106.2	30%	115.3	33%
24	112.8	32%	108.2	31%	109.4	31%	94.7	27%	102.6	29%	127.9	37%
25	111.8	32%	106.7	31%	105.6	30%	97.2	28%	101.1	29%	122.7	35%
26	113.9	33%	109.3	31%	109.1	31%	105.2	30%	101.5	29%	127.1	36%
27	111.0	32%	110.8	32%	110.7	32%	106.2	30%	104.8	30%	128.8	37%
28	106.3	30%	111.5	32%	109.8	31%	102.9	29%	105.8	30%	133.5	38%
29	108.7	31%	0.0	0%	113.1	32%	99.4	28%	107.7	31%	133.4	38%
30	110.9	32%	114.2	33%	114.2	33%	99.1	28%	106.8	31%	126.6	36%
31	113.4	33%	112.0	32%	112.0	32%	112.0	32%	109.9	31%	126.6	36%

**Table 2 - 2017 Volume as a Percentage of Approved Plant Capacity
(Part 2 - July to December)**

Date	July		August		September		October		November		December	
	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %	Average Daily Flow (MLD)	Plant Capacity %
1	119.6	34%	152.3	44%	115.7	33%	118.6	34%	99.3	28%	97.0	28%
2	129.0	37%	146.6	42%	109.4	31%	119.0	34%	99.7	29%	99.0	28%
3	132.4	38%	132.0	38%	108.3	31%	121.7	35%	101.5	29%	98.1	28%
4	134.6	39%	126.8	36%	116.7	33%	121.8	35%	97.4	28%	94.0	27%
5	152.0	44%	130.3	37%	117.3	34%	118.7	34%	100.3	29%	94.9	27%
6	150.5	43%	129.4	37%	115.0	33%	110.9	32%	94.3	27%	93.3	27%
7	130.1	37%	132.3	38%	115.4	33%	111.5	32%	97.9	28%	91.2	26%
8	120.5	35%	140.6	40%	111.8	32%	108.5	31%	96.2	28%	97.4	28%
9	128.6	37%	148.0	42%	110.9	32%	109.9	32%	97.5	28%	98.1	28%
10	117.1	34%	144.5	41%	113.9	33%	106.3	30%	91.6	26%	99.2	28%
11	122.9	35%	133.0	38%	118.3	34%	101.5	29%	96.8	28%	96.5	28%
12	120.5	35%	122.6	35%	119.7	34%	100.9	29%	99.8	29%	97.6	28%
13	113.6	33%	129.3	37%	120.0	34%	102.0	29%	98.6	28%	99.9	29%
14	114.7	33%	139.9	40%	119.2	34%	100.9	29%	96.4	28%	98.4	28%
15	116.8	33%	138.5	40%	121.4	35%	104.2	30%	99.6	29%	100.0	29%
16	123.1	35%	145.8	42%	123.6	35%	100.8	29%	95.5	27%	96.6	28%
17	130.7	37%	124.5	36%	122.4	35%	103.9	30%	95.1	27%	101.4	29%
18	133.8	38%	122.1	35%	116.2	33%	106.1	30%	98.3	28%	94.8	27%
19	134.5	39%	121.2	35%	113.8	33%	102.9	29%	99.8	29%	98.3	28%
20	132.5	38%	127.0	36%	119.4	34%	102.8	29%	96.8	28%	98.9	28%
21	140.4	40%	136.0	39%	118.7	34%	107.8	31%	93.1	27%	96.3	28%
22	128.1	37%	123.6	35%	123.5	35%	103.2	30%	94.7	27%	94.2	27%
23	133.3	38%	128.3	37%	126.7	36%	101.1	29%	95.9	28%	96.2	28%
24	132.4	38%	128.3	37%	126.6	36%	112.5	32%	97.0	28%	95.4	27%
25	133.8	38%	133.8	38%	125.4	36%	99.4	28%	98.0	28%	89.4	26%
26	140.2	40%	130.0	37%	131.8	38%	95.8	27%	100.1	29%	89.5	26%
27	136.8	39%	128.5	37%	125.2	36%	98.4	28%	95.6	27%	93.0	27%
28	141.6	41%	124.5	36%	121.2	35%	96.8	28%	94.3	27%	94.5	27%
29	144.7	41%	116.7	33%	116.5	33%	102.5	29%	99.0	28%	95.9	27%
30	149.3	43%	122.5	35%	118.3	34%	102.0	29%	96.6	28%	96.3	28%
31	151.8	43%	117.0	34%	118.3	34%	99.7	29%	99.7	29%	97.2	28%

Table 3 - 2017 Microbiological Sample Count

Month	January	February	March	April	May	June	July	August	September	October	November	December
DISTRIBUTION	179	165	154	162	165	160	176	165	165	165	169	145
TREATED	157	156	167	152	181	160	176	161	155	177	182	135
RAW	21	19	20	18	22	20	21	20	19	21	22	17
TOTAL	357	340	341	332	368	340	373	346	339	363	373	297

Table 4 - 2017 Distribution Chlorine Residuals

JANUARY TO MARCH 2017

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D20	D21	D22	
Jan	LOW	1.23	1.17	0.92	0.97	0.86	1.12	1.00	1.12	0.88	1.36	1.11	1.13	0.94	1.08	1.07	1.09	0.95	0.93	1.05	0.89	0.80
	HIGH	1.39	1.35	1.16	1.26	1.16	1.40	1.25	1.44	1.22	1.55	1.24	1.29	1.25	1.32	1.27	1.44	1.23	1.30	1.28	1.31	1.08
	AVG	1.31	1.27	1.04	1.12	1.04	1.27	1.12	1.30	1.08	1.46	1.18	1.18	1.13	1.17	1.18	1.31	1.12	1.11	1.16	1.13	0.95
Feb	LOW	1.11	1.11	0.72	0.80	0.72	0.93	0.75	0.85	0.77	1.34	0.86	0.88	1.02	0.98	1.24	0.90	0.91	0.57	0.61	0.61	0.85
	HIGH	1.39	1.35	1.08	1.21	1.13	1.43	1.29	1.23	1.13	1.60	1.30	1.32	1.27	1.31	1.50	1.32	1.16	1.27	1.25	0.96	0.96
	AVG	1.27	1.26	0.95	1.07	0.93	1.19	1.03	1.13	0.96	1.49	1.14	1.13	1.17	1.16	1.36	1.14	1.09	1.06	1.02	0.83	0.83
Mar	LOW	0.97	1.12	0.72	0.85	0.84	1.06	0.80	1.00	0.78	1.29	1.03	1.04	1.01	0.83	1.04	1.06	1.03	0.89	0.96	0.87	0.74
	HIGH	1.35	1.36	1.14	1.25	1.11	1.37	1.22	1.35	1.27	1.59	1.19	1.21	1.17	1.27	1.23	1.39	1.23	1.00	1.15	1.27	0.93
	AVG	1.18	1.21	0.95	1.03	0.96	1.23	1.03	1.17	1.01	1.42	1.13	1.10	1.06	1.10	1.24	1.11	0.94	1.07	1.03	0.86	0.86
Quarterly Avg		1.25	1.25	0.98	1.07	0.98	1.23	1.06	1.20	1.01	1.46	1.15	1.14	1.12	1.15	1.30	1.12	1.05	1.10	1.06	0.88	0.88

NOTE: All values in mg/l unless otherwise stated

APRIL TO JUNE 2017

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D20	D21	D22	
Apr	LOW	1.11	1.12	0.77	1.09	0.88	1.13	0.89	1.06	1.02	1.36	0.94	0.89	1.04	1.14	1.14	1.06	0.74	0.88	0.96	0.79	
	HIGH	1.37	1.38	1.11	1.23	1.08	1.28	1.04	1.26	1.08	1.70	1.19	1.22	1.21	1.15	1.24	1.33	1.32	1.19	1.26	1.24	1.05
	AVG	1.26	1.25	0.96	1.15	0.97	1.19	0.98	1.18	1.06	1.46	1.08	1.10	1.11	1.02	1.14	1.22	1.20	1.01	1.07	1.07	0.91
May	LOW	1.02	1.12	0.54	0.55	0.67	0.87	0.74	0.90	0.64	1.32	0.91	0.93	1.00	0.90	1.08	0.98	0.68	0.80	0.61	0.61	0.65
	HIGH	1.35	1.32	1.02	1.17	1.04	1.29	1.02	1.14	1.15	1.57	1.12	1.21	1.09	1.17	1.38	1.23	1.12	1.57	1.24	1.03	1.03
	AVG	1.22	1.22	0.78	0.96	0.85	1.11	0.90	1.02	0.90	1.46	1.02	1.06	0.90	1.09	1.24	1.11	0.87	1.07	0.94	0.83	0.83
Jun	LOW	0.99	1.08	0.70	0.81	0.73	0.77	0.70	1.09	0.69	1.31	0.97	0.79	1.00	1.05	0.93	1.02	0.78	0.91	0.67	0.81	
	HIGH	1.23	1.33	1.06	1.18	1.13	1.42	1.13	1.32	1.18	1.56	1.48	1.45	1.13	1.26	1.31	1.42	1.46	1.31	1.29	1.15	1.26
	AVG	1.16	1.25	0.96	1.06	0.93	1.21	1.03	1.22	1.03	1.44	1.22	1.12	1.17	1.16	1.22	1.24	1.07	1.12	1.01	1.02	1.02
Quarterly Avg		1.21	1.24	0.90	1.06	0.91	1.17	0.97	1.14	1.00	1.46	1.10	1.09	0.98	1.09	1.23	1.18	0.98	1.09	1.01	0.82	0.82

NOTE: All values in mg/l unless otherwise stated

Table 4 - 2017 Distribution Chlorine Residuals

JULY TO SEPTEMBER 2017

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D20	D21	D22
Jul	LOW	1.10	0.97	0.71	0.76	0.75	0.87	0.77	0.89	0.88	1.18	0.89	0.85	1.01	0.96	0.98	0.86	0.84	0.79	0.68	0.71
	HIGH	1.38	1.36	1.12	1.43	1.35	1.24	1.14	1.33	1.17	1.66	1.48	1.26	1.25	1.29	1.39	1.46	1.39	1.18	1.12	1.26
	AVG	1.23	1.23	0.94	1.10	1.04	1.12	0.94	1.17	0.97	1.46	1.08	0.88	1.11	1.11	1.14	1.08	1.05	0.96	0.95	0.96
Aug	LOW	1.12	1.30	1.01	1.00	0.85	1.01	0.83	1.22	0.94	1.51	1.13	0.78	0.84	1.03	1.11	0.75	1.08	0.79	0.79	0.65
	HIGH	1.68	1.69	1.50	1.54	1.38	1.58	1.39	1.46	1.44	1.93	1.45	1.56	1.47	1.63	1.31	1.60	1.46	1.35	1.36	1.44
	AVG	1.44	1.45	1.23	1.26	1.06	1.30	1.10	1.35	1.10	1.67	1.28	1.14	1.03	1.18	1.21	1.33	1.16	1.24	1.04	1.06
Sep	LOW	1.12	1.27	1.01	0.82	0.80	1.13	0.84	1.14	0.94	1.45	1.14	0.73	0.78	0.99	1.05	0.81	0.96	0.87	0.98	0.63
	HIGH	1.58	1.60	1.33	1.30	1.27	1.69	1.42	1.55	1.36	1.69	1.60	1.34	1.04	1.39	1.32	1.67	1.52	1.43	1.15	1.06
	AVG	1.40	1.45	1.16	1.17	1.03	1.35	1.15	1.31	1.15	1.58	1.32	1.10	0.90	1.14	1.17	1.39	1.17	1.24	1.04	0.92
Quarterly Avg		1.36	1.38	1.11	1.18	1.05	1.26	1.06	1.28	1.07	1.57	1.23	1.09	0.94	1.14	1.17	1.29	1.14	1.01	1.06	0.88

NOTE: All values in mg/l unless otherwise stated

OCTOBER TO DECEMBER 2017

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D20	D21	D22
Oct	LOW	1.13	1.22	0.88	1.01	0.78	1.10	0.89	1.16	0.94	1.42	1.20	0.96	0.98	0.92	1.26	1.00	1.06	0.77	0.88	0.72
	HIGH	1.60	1.41	1.33	1.33	1.15	1.36	1.06	1.29	1.13	1.59	1.30	1.28	1.01	1.51	1.33	1.63	1.28	1.13	1.25	1.15
	AVG	1.34	1.29	1.12	1.11	0.94	1.22	0.97	1.21	1.03	1.50	1.25	1.17	0.84	1.22	1.14	1.40	1.13	1.19	1.00	0.90
Nov	LOW	1.11	0.92	0.75	0.77	0.72	0.94	0.84	1.07	0.84	1.21	0.84	1.01	0.78	1.07	0.95	1.09	1.08	0.90	0.90	0.78
	HIGH	1.36	1.40	1.06	1.18	0.95	1.27	1.10	1.27	1.17	1.54	1.40	1.31	0.88	1.30	1.29	1.50	1.33	1.31	1.08	1.25
	AVG	1.24	1.26	0.91	0.98	0.84	1.18	1.01	1.21	1.00	1.37	1.12	1.16	0.83	1.21	1.14	1.32	1.18	1.09	1.02	0.88
Dec	LOW	1.15	1.13	0.89	0.98	0.74	0.85	0.73	0.98	0.93	1.04	0.98	0.77	0.69	0.85	0.64	1.13	1.07	0.83	0.99	1.03
	HIGH	1.38	1.30	1.28	1.27	1.14	1.28	1.15	1.31	1.25	1.59	1.33	1.29	1.44	1.07	1.42	1.36	1.32	1.34	1.28	1.16
	AVG	1.23	1.22	1.02	1.14	0.98	1.10	0.98	1.15	1.07	1.39	1.17	1.11	0.97	0.95	1.12	1.24	1.13	1.12	1.10	0.83
Quarterly Avg		1.27	1.26	1.02	1.08	0.92	1.17	0.99	1.19	1.04	1.42	1.18	1.14	0.88	1.13	1.32	1.16	1.14	1.05	1.06	0.87

NOTE: All values in mg/l unless otherwise stated

(0.05 mg/L - minimum standard per Ministry of Environment)
(0.20 mg/L - minimum WUC standard)

Table 5 - 2017 Operational Parameters

	JANUARY			FEBRUARY			MARCH			PLANT PARAMETERS HIGH LOW VALUES		MINISTRY MAC HIGH ⁽¹⁾ LOW	
	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	HIGH ⁽¹⁾	LOW
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)
COLOUR ⁽²⁾													
ALUMINUM ⁽³⁾	24	5	10	21	8	13	17	10	13	5.00	100.0	0.0	N/A
pH ⁽²⁾	7.15	6.88	7.04	7.19	6.90	7.05	7.22	6.87	7.06	7.30	6.50	0.0	N/A
TURBIDITY ⁽¹⁾	0.06	0.02	0.02	0.04	0.02	0.03	0.04	0.03	0.03	1.00	0.00	1.00	0.00
HARDNESS ⁽²⁾	114	88	101	170	98	116	124	97	109	100	80	1.00	N/A
TEMPERATURE	3.2	0.2	2.1	9.5	1.4	2.8	6.5	1.4	3.9				
ODOUR/TASTE	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	in-offensive			N/A
ALKALINITY ^(2 and 3)	84	70	77	102	76	84	104	72	83	500	30	N/A	N/A
CHLORINE RESIDUAL ⁽¹⁾	1.68	1.26	1.48	1.70	1.28	1.49	1.66	1.25	1.48	1.50	0.80	N/A	0.05

	APRIL			MAY			JUNE			PLANT PARAMETERS HIGH LOW VALUES		MINISTRY MAC HIGH ⁽¹⁾ LOW	
	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	HIGH ⁽¹⁾	LOW
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)
COLOUR ⁽²⁾													
ALUMINUM ⁽³⁾	35	13	20	147	9	28	69	7	44	5.00	100.0	0.0	N/A
pH ⁽²⁾	7.18	6.98	7.09	7.21	7.00	7.08	7.19	7.02	7.11	7.30	6.50	0.0	N/A
TURBIDITY ⁽¹⁾	0.06	0.03	0.04	0.10	0.04	0.06	0.07	0.04	0.05	1.00	0.00	1.00	0.00
HARDNESS ⁽²⁾	112	96	105	140	94	111	108	92	97	100	80	1.00	N/A
TEMPERATURE	14.9	6.0	10.2	16.6	10.9	14.0	21.7	16.1	19.4				
ODOUR/TASTE	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	in-offensive			N/A
ALKALINITY ^(2 and 3)	94	78	84	108	78	87	88	74	79	500	30	N/A	N/A
CHLORINE RESIDUAL ⁽¹⁾	1.57	1.26	1.45	1.78	1.19	1.45	1.79	1.46	1.55	1.50	0.80	N/A	0.05

Table 5 - 2017 Operational Parameters

	JULY			AUGUST			SEPTEMBER			PLANT PARAMETERS HIGH LOW VALUES		MINISTRY MAC HIGH ⁽¹⁾ LOW	
	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	HIGH ⁽¹⁾	LOW
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)
COLOUR ⁽²⁾													
ALUMINUM ⁽³⁾	117	29	60	82	26	55	94	34	60	5.00	100.0	0.0	N/A
pH ⁽²⁾	7.21	6.83	7.08	7.15	6.88	7.04	7.15	7.02	7.08	7.30	6.50	0.0	N/A
TURBIDITY ⁽¹⁾	0.08	0.05	0.06	0.11	0.05	0.07	0.07	0.05	0.06	1.00	0.00	1.00	0.00
HARDNESS ⁽²⁾	106	84	96	110	84	97	110	88	100	100	80	1.00	N/A
TEMPERATURE	25.1	20.7	23.3	24.9	21.2	23.1	22.8	18.4	20.6				
ODOUR/TASTE	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	in-offensive			N/A
ALKALINITY ^(2 and 3)	86	72	78	92	70	77	80	70	76	500	30	N/A	N/A
CHLORINE RESIDUAL ⁽¹⁾	1.71	1.32	1.51	1.84	1.47	1.70	1.82	1.40	1.62	1.50	0.80	N/A	0.05

	OCTOBER			NOVEMBER			DECEMBER			PLANT PARAMETERS HIGH LOW VALUES		MINISTRY MAC HIGH ⁽¹⁾ LOW	
	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	AVG.	HIGH	LOW	HIGH ⁽¹⁾	LOW
	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)
COLOUR ⁽²⁾													
ALUMINUM ⁽³⁾	84	21	36	30	11	17	25	9	13	5.00	100.0	0.0	N/A
pH ⁽²⁾	7.08	6.72	7.01	7.11	6.93	7.04	7.18	7.00	7.09	7.30	6.50	0.0	N/A
TURBIDITY ⁽¹⁾	0.05	0.03	0.04	0.04	0.02	0.03	0.06	0.02	0.03	1.00	0.00	1.00	0.00
HARDNESS ⁽²⁾	118	96	103	115	96	103	124	100	111	100	80	1.00	N/A
TEMPERATURE	19.9	11.2	16.8	10.9	5.3	7.7	6.3	1.2	3.0				
ODOUR/TASTE	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	(---)	in-offensive			N/A
ALKALINITY ^(2 and 3)	82	74	78	86	74	80	92	74	80	500	30	N/A	N/A
CHLORINE RESIDUAL ⁽¹⁾	1.70	1.32	1.47	1.58	1.25	1.46	1.73	1.30	1.48	1.50	0.80	N/A	0.05

(¹) MAC - Maximum Allowable Concentration
(²) Health Canada Operational Guideline (O.G.)
(³) Recommended in coagulant treated drinking water

**Schedule 23
Inorganic Parameters**

Item	Parameter
1.	Antimony
2.	Arsenic
3.	Barium
4.	Boron
5.	Cadmium
6.	Chromium
7.	Mercury
8.	Selenium
9.	Uranium

**Schedule 24
Organic Parameters**

Item	Parameter
1.	Alachlor
2.	Atrazine + N-dealkylated metabolites
3.	Azinphos-methyl
4.	Benzene
5.	Benzo(a)pyrene
6.	Bromoxynil
7.	Carbaryl
8.	Carbofuran
9.	Carbon Tetrachloride
10.	Chlorpyrifos
11.	Diazinon
12.	Dicamba
13.	1,2-Dichlorobenzene
14.	1,4-Dichlorobenzene
15.	1,2-Dichloroethane
16.	1,1-Dichloroethylene (vinylidene chloride)
17.	Dichloromethane
18.	2,4-Dichlorophenol
19.	2,4-Dichlorophenoxy acetic acid (2,4-D)
20.	Diclofop-methyl
21.	Dimethoate
22.	Diquat
23.	Diuron
24.	Glyphosate
25.	Malathion
26.	2-Methyl-4-chlorophenoxyacetic acid
27.	Metolachlor
28.	Metribuzin
29.	Monochlorobenzene
30.	Paraquat
31.	Pentachlorophenol
32.	Phorate
33.	Picloram
34.	Polychlorinated Biphenyls (PCB)
35.	Prometryne
36.	Simazine
37.	Terbufos
38.	Tetrachloroethylene (perchloroethylene)
39.	2,3,4,6-Tetrachlorophenol
40.	Triallate
41.	Trichloroethylene
42.	2,4,6-Trichlorophenol
43.	Trifluralin
44.	Vinyl Chloride



OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	220003421
Drinking-Water System Name:	City of Windsor Drinking Water System
Drinking-Water System Owner:	The Windsor Utilities Commission
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	Calendar Year 2017

<p><i><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></i></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;"> <p>The Windsor Utilities Commission 4545 Rhodes Dr. Windsor ON N9A 5T7</p> </div>	<p><i><u>Complete for all other Categories.</u></i></p> <p>Number of Designated Facilities served: <input type="text"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Number of Interested Authorities you report to: <input type="text"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes <input type="checkbox"/> No <input type="checkbox"/></p>
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Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
Town of Lasalle, ON	220004402
Town of Tecumseh, ON	260004969

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?
Yes No

Indicate how you notified system users that your annual report is available, and is free of charge.
 Public access/notice via the web
 Public access/notice via Government Office
 Public access/notice via a newspaper
 Public access/notice via Public Request

Appendix B - 2017 O.Reg 170/03 Annual Report

Windsor Utilities Commission

- Public access/notice via a Public Library
- Public access/notice via other method _____

Describe your Drinking-Water System

The Windsor Utilities Commission water treatment facility employs screening, pre-chlorination (on an as needed basis), pH adjustment (utilizing CO₂), primary disinfection (utilizing ozone), coagulation, flocculation, sedimentation, dual-media filtration with post chlorination and corrosion control adjustment (utilizing phosphoric acid) to treat raw water obtained from the Detroit River.

The water treatment plant pumps sedimentation sludge and backwash water to the sanitary sewer. Treated water from the plant is routed to an on-site reservoir and subsequently pumped into the distribution system from two pumping stations that are co-located nearby the water treatment facilities. Water from the pumping stations satisfies demand for the greater Windsor area including the communities of Tecumseh and LaSalle. A remote reservoir and pumping station provides a re-chlorination facility (using sodium hypochlorite) to provide system pressure and flow to the southwest portion of the city, while a centrally located water tower provides pressure and flow control to the downtown core.

The drinking water system is monitored at various locations, both at the water treatment and pumping stations as well as throughout the transmission system via a Supervisory Control and Data Acquisition (SCADA) system.

List all water treatment chemicals used over this reporting period

Chlorine gas, Sodium Hypochlorite, Carbon dioxide (CO₂), Ozone (generated on-site using liquid oxygen), Calcium Thiosulfate (ozone quench agent), Polyaluminum chloride (PaCl), Filter aid cationic polymer and phosphoric acid (corrosion control agent).

- Were any significant expenses incurred to?**
- Install required equipment
 - Repair required equipment
 - Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

Installed 87 new public-use fire hydrants through capital projects.

Replaced 58 existing public-use fire hydrants through capital projects.

Installed 11.0 km of watermain <400 mm and 0.5 km of watermain = 400 mm.

Decommissioned approximately 12.4 km of watermain <400 mm and decommissioned 0.5 km watermain >400 mm.

Mirlees diesel engines removed and one was replaced with Caterpillar engine at the AJ Brian pumping station. This was a normal life cycle replacement.

Replaced the east intake screens at the AJ Brian pumping station. This was a normal life cycle replacement.

Began improvements to the Security System at the AH Weeks Treatment plant. This was a normal life cycle replacement.

Phase two of the three phase roof replacement for the AH Weeks Treatment plant was completed. This was a normal life cycle replacement.

Replaced / installed 8,002 of new water meter units ranging in size from 5/8" to 8".

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
March 3, 2017	AWQI #132562 Lead at Hydrant	Lead results of 0.0139 mg/L at distribution system hydrant located at 505 Dougall Ave.	mg/L	Resampled initial location, downstream and up stream of the location.	March 9, 2017
April 24, 2017	AWQI #132294 Free Chlorine Residual 0.01 mg/L WS0386-05 Blow Off	Free Chlorine Residual of 0.01 mg/L	mg/L	After a total of 1 hour of flushing a free chlorine residual of 1.09 mg/L was obtained. The adverse was recorded on a New Watermain not commissioned and segregated by backflow prevention from the live DWS.	April 24, 2017
May 31, 2017	AWQI #133210 Free Chlorine Residual 0.03 mg/L at hydrant in front of 3728 Blackburn St.	Free Chlorine residual of 0.03	mg/L	After flushing the hydrant for 25 minutes a free chlorine residual of 0.44 mg/L was obtained.	May 3, 2017
June 5, 2017	AWQI #133257 On June 3, 2017 Treated Water (TW) Free Chlorine residual at 9:50 a.m. was 0.03 mg/L.	Treated Water (TW) Free Chlorine residual at 9:50 a.m. was 0.03	mg/L	Free Residual Chlorine on treated water (TW) June 3, 2017 at 9:45 a.m. 0.05 mg/L, 9:50 a.m. 0.03 mg/L, 9:55 a.m. 0.01 mg/L, 10:00 a.m. 0.03 mg/L, 10:05 a.m. 0.11 mg/L, 10:15 a.m. 0.08 mg/L, 10:20 a.m. 0.01 mg/L, 10:25	June 5, 2017

				a.m. 0.13 mg/L. During maintenance in the plant the Chlorine injection to the treated water clearwell was shut down inadvertently. Chlorine injection to AJ Brian and George Avenue pumping stations was operational at all times. Average Chlorine values during this time for AJ Brian 1.08 mg/L and for George Avenue was 1.45 mg/L. No customers have been affected.	
July 12, 2017	AWQI #133994 Free residual chlorine reading of 0.04 mg/L at hydrant in front of 3728 Blackburn street. Hydrant is on a weekly flushing maintenance system.	Free residual chlorine reading of 0.04 mg/L at hydrant in front of 3728 Blackburn street. Hydrant is on a weekly flushing maintenance system.	mg/L	After flushing the hydrant for 20 minutes a free residual chlorine reading of 0.44 has been obtained.	July 12, 2017
Nov. 21, 2017	AWQI #138140 1 Total Coliform (TC) Count at Sample station D02-2350 College Avenue	1 Total Coliform	CFU/100 mL	Resample initial location downstream and upstream of the location.	Nov. 23, 2017

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	240	0 - 1100	0 - 8500	240	<10 to >2000
Treated	1959	0 - 0	0 - 0	1476	<10 to >2000
Distribution	1970	0 - 0	0 - 1	1160	<10 to >2000

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)	Unit of Measure
Turbidity	365	0.02 - 0.11	NTU
Chlorine	365	1.44 - 1.72	mg/L

NOTE: For continuous monitors use 8760 as the number of samples.

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
MDWL 025-101	*Bromate - Treated	1-Jan-17 to 31-Dec-17	0.004	mg/L
MDWL 025-101	*Bromate - Distribution	1-Jan-17 to 31-Dec-17	0.004	mg/L

* Reported as Running Annual Average

Summary of Inorganic parameters tested during this reporting period or the most recent sample results.

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	October 4, 2017	0.00008	mg/L	No
Arsenic	October 4, 2017	0.0004	mg/L	No
Barium	October 4, 2017	0.0153	mg/L	No
Boron	October 4, 2017	0.027	mg/L	No
Cadmium	October 4, 2017	0.00001	mg/L	No
Chromium	October 4, 2017	0.00072	mg/L	No
Lead	October 4, 2017	0.00001 <MDL	mg/L	No
Mercury	October 4, 2017	0.00001 <MDL	mg/L	No
Selenium	October 4, 2017	0.00015	mg/L	No
Sodium	January 4, 2017	5.66	mg/L	No
Uranium	October 4, 2017	0.000085	mg/L	No
Fluoride	January 4, 2017	0.09	mg/L	No
Nitrite	October 4, 2017	0.003 <MDL	mg/L	No
Nitrate	October 4, 2017	0.204	mg/L	No

Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) - (max #)	Unit of Measure	Number of Exceedances
Plumbing	295	0.01 <MDL - 44.3	ug/L	29
Distribution	201	0.01 <MDL - 13.9	ug/L	1

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Oct 4, 2017	0.00002 <MDL	mg/L	No
Atrazine + N-dealkylated metabolites	Oct 4, 2017	0.00001 <MDL	mg/L	No
Azinphos-methyl	Oct 4, 2017	0.00005 <MDL	mg/L	No
Benzene	Oct 4, 2017	0.00032 <MDL	mg/L	No
Benzo(a)pyrene	Oct 4, 2017	0.000004 <MDL	mg/L	No
Bromoxynil	Oct 4, 2017	0.00033 <MDL	mg/L	No
Carbaryl	Oct 4, 2017	0.00005 <MDL	mg/L	No
Carbofuran	Oct 4, 2017	0.00001 <MDL	mg/L	No
Carbon Tetrachloride	Oct 4, 2017	0.00016 <MDL	mg/L	No
Chlorpyrifos	Oct 4, 2017	0.00002 <MDL	mg/L	No
Diazinon	Oct 4, 2017	0.00002 <MDL	mg/L	No
Dicamba	Oct 4, 2017	0.00020 <MDL	mg/L	No
1,2-Dichlorobenzene	Oct 4, 2017	0.00041 <MDL	mg/L	No
1,4-Dichlorobenzene	Oct 4, 2017	0.00036 <MDL	mg/L	No
1,2-Dichloroethane	Oct 4, 2017	0.00035 <MDL	mg/L	No
1,1-Dichloroethylene (vinylidene chloride)	Oct 4, 2017	0.00033 <MDL	mg/L	No
Dichloromethane	Oct 4, 2017	0.00035 <MDL	mg/L	No
2,4-Dichlorophenol	Oct 4, 2017	0.00015 <MDL	mg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Oct 4, 2017	0.00019 <MDL	mg/L	No
Diclofop-methyl	Oct 4, 2017	0.0004 <MDL	mg/L	No
Dimethoate	Oct 4, 2017	0.00003 <MDL	mg/L	No
Diquat	Oct 4, 2017	0.001 <MDL	mg/L	No
Diuron	Oct 4, 2017	0.00003 <MDL	mg/L	No
Glyphosate	Oct 4, 2017	0.001 <MDL	mg/L	No
Haloacetic Acids (HAA5) - Running Annual Average	Oct 4, 2017	0.0053 <MDL	mg/L	No
Malathion	Oct 4, 2017	0.00002 <MDL	mg/L	No
MCPA	Oct 4, 2017	0.00012 <MDL	mg/L	No
Metolachlor	Oct 4, 2017	0.00001 <MDL	mg/L	No
Metribuzin	Oct 4, 2017	0.00002 <MDL	mg/L	No
Monochlorobenzene	Oct 4, 2017	0.0003 <MDL	mg/L	No
Paraquat	Oct 4, 2017	0.001 <MDL	mg/L	No
Pentachlorophenol	Oct 4, 2017	0.00015 <MDL	mg/L	No
Phorate	Oct 4, 2017	0.00001 <MDL	mg/L	No
Picloram	Oct 4, 2017	0.001 <MDL	mg/L	No
Polychlorinated Biphenyls (PCB)	Oct 4, 2017	0.00004 <MDL	mg/L	No
Prometryne	Oct 4, 2017	0.00003 <MDL	mg/L	No
Simazine	Oct 4, 2017	0.00001 <MDL	mg/L	No
THM – Running Annual Average	Oct 4, 2017	0.0090	mg/L	No
Q1 2017 = 0.006 mg/L	Jan 4, 2017			No

Q2 2017 = 0.007 mg/L	April 3, 2017			No
Q3 2017 = 0.012 mg/L	July 3, 2017			No
Q4 2017 = 0.011 mg/L	Oct 4, 2017			No
Terbofos	Oct 4, 2017	0.00001 <MDL	mg/L	No
Tetrachlorethylene	Oct 4, 2017	0.00035 <MDL	mg/L	No
2,3,4,6-Tetrachlorophenol	Oct 4, 2017	0.00020 <MDL	mg/L	No
Triallate	Oct 4, 2017	0.00001 <MDL	mg/L	No
Trichloroethylene	Oct 4, 2017	0.00044 <MDL	mg/L	No
2,4,6-Trichlorophenol	Oct 4, 2017	0.00025 <MDL	mg/L	No
Trifluralin	Oct 4, 2017	0.00002 <MDL	mg/L	No
Vinyl Chloride	Oct 4, 2017	0.00017 <MDL	mg/L	No

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

No Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standard.



Cement columns which will support the parklands above the George Avenue Reservoir.

Our Directors

MANAGEMENT TEAM

Helga Reidel
President and CEO

Garry Rossi
VP Water Operations

John Wladarski
VP Shared Services
and COO

Byron Thompson
VP Finance and CFO

Jim Brown
VP Hydro Operations

WINDSOR UTILITIES COMMISSION

James Drummond (Chair)
Retired

John Elliott
Councillor, City of Windsor,
Ward 2

Hillary Payne
Councillor, City of Windsor,
Ward 9

Paul Borrelli
Councillor, City of Windsor,
Ward 10

J. Douglas Lawson
O. Ont. QC. LLD
Counsel, Willis Law

Egidio Sovran,
Owner, Sovran CPA, CA &
Associates

Drew Dilkens
Mayor, City of Windsor

Rocco Lucente
President, R. Lucente
Engineering Inc.

